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New Patent Claims
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1. An optical transmitter and/or receiver assembly comprising

- at least one transmitter component (2) and/or
- at least one receiver component (3, 4) and also
- 5 - a lens (14, 15), which serves for the optical coupling of the transmitter component and/or the receiver component to an optical fiber that can be fixed to the transmitter and/or receiver assembly (1),

10 characterized by

- a planar optical circuit (5) with at least one integrated waveguide (51),
- light from the transmitter component (1) being coupled into a waveguide (51) of the planar optical circuit (5) and/or
- 15 - light being coupled out from the waveguide (51) of the planar optical circuit (5) and being guided onto the receiver component (3, 4),
- the transmitter component (1) and the receiver component (3, 4) in this case being situated outside the plane in which the integrated waveguide (51) is formed in the planar optical circuit (5),
- 20 - the lens (14, 15) being arranged on the planar optical circuit (5),
- the light being guided between the lens (14, 15), on the one hand, and the transmitter component (2) and/or the receiver component (3, 4), on the other hand, in the integrated waveguide (51).

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30 2. The circuit arrangement as claimed in claim 1, characterized in that the lens (14) is arranged in a cutout (13) on the surface of the planar optical circuit (5).

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3. The circuit arrangement as claimed in claim 2,
characterized in that the cutout (13)

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is formed in the shape of a pyramid, in particular in the shape of a truncated pyramid.

4. The circuit arrangement as claimed in claim 2 or 5, characterized in that the lens (14) is a spherical lens.

5. The circuit arrangement as claimed in claim 1, characterized in that the lens (15) is arranged at the 10 end side on an end area (55) of the planar optical circuit (5) and in this case in a manner directly adjoining the end area of the integrated waveguide (51) of the planar optical circuit (5).

15 6. The circuit arrangement as claimed in claim 5, characterized in that the lens (15) is fixed to the end area (55) of the planar optical circuit (5) by means of an index-matched adhesive.

20 7. The circuit arrangement as claimed in claim 5 or 6, characterized in that the lens (15) is formed as a planoconvex lens and the plane side (15a) is fixed to the end area (55) of the planar optical circuit (5).

25 8. The circuit arrangement as claimed in at least one of the preceding claims, characterized in that a plurality of receiver components (3, 4) are provided and these in each case detect light having a different wavelength, the waveguide (51) in each case having 30 coupling-out and deflection means (91, 92, 8) which couple out the received light for each received wavelength wavelength-selectively from the plane of the planar optical circuit (5) and guide it onto the assigned receiver component (3, 4).

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9. The circuit arrangement as claimed in claim 8,
characterized in that the coupling-out and deflection
means are in each case formed by a Mach-Zehnder
component (91, 92) and an assigned deflection prism
5 (8), light having a specific wavelength being coupled
out from the waveguide (51) by the Mach-Zehnder
component (91, 92), being fed to the deflection prism
(8) and being deflected by the latter onto the receiver
component (3, 4).

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10. The circuit arrangement as claimed in claim 8,
characterized in that the coupling-out and deflection
means are in each case formed by a wavelength-
selectively coated mirror area which interrupts the
15 waveguide of the planar optical circuit under
consideration in an oblique arrangement and couples out
light having a specific wavelength from the waveguide,
while it is transparent to light having other
wavelengths.

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11. The circuit arrangement as claimed in at least one
of the preceding claims, characterized in that the
planar optical circuit (5) is arranged on the top side
of a substrate (6).

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12. The circuit arrangement as claimed in claim 11,
characterized in that the at least one transmitter
component (2) and the at least one receiver component
30 (3, 4) are arranged on the underside of the substrate
(6).

13. The circuit arrangement as claimed in claim 12,
characterized in that the transmitter component (2)
and/or the receiver component (3, 4) are formed as
35 prefabricated housed modules that are mounted on the
underside of the substrate (6).

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14. The circuit arrangement as claimed in at least one of the preceding claims, characterized in that the transmitter and/or receiver assembly (1) has a housing (10) having a receptacle opening (11) for the coupling 5 of an optical fiber.

15. The circuit arrangement as claimed in claim 14, characterized in that the receptacle opening (11) is formed as a plug receptacle.

10 16. The circuit arrangement as claimed in claim 14 or 15, characterized in that the receptacle opening (11) serves for receiving a glass fiber arranged in a ferrule.

15 17. The circuit arrangement as claimed in at least one of claims 14 to 16, characterized in that the receptacle opening (11) is provided with an adjustable metal sleeve (12), into which an optical fiber or a 20 ferrule surrounding the optical fiber can be plugged.

18. The circuit arrangement as claimed in at least one of the preceding claims, characterized in that the free-radiating region between lens (14, 15) and 25 waveguide (51) is potted with an optically transparent medium.

19. The circuit arrangement as claimed in at least one of the preceding claims, characterized in that a 30 plurality of waveguides of the planar optical circuit (5) are assigned an array of optical fibers to be coupled, a lens for light coupling in each case being arranged between a waveguide and an optical fiber of the array, and the lens in each case being arranged on 35 the planar optical circuit (5).

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20. The circuit arrangement as claimed in at least one of claims 8 to 19, characterized in that a wavelength-selective filter (7) is in each case arranged upstream of the receiver components (3, 4).